



# AUTOMATIC SPOKEN LANGUAGE TRANSLATOR



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## Payoff

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The Automatic Spoken Language Translator provides computer-aided speech translation to bridge language barriers. The technology allows users to speak in their native language into the computer-based system, which then generates computer-spoken output in the selected output language.

## Accomplishment

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In emergency situations, language barriers can prevent or hinder effective and timely reactions. Computer-aided speech translation, developed by the Air Force Research Laboratory's (AFRL's) Information Directorate (IF), provides a solution to such communications problems by translating spoken utterances from one language into another. The system's speech recognition component is speaker-independent, that is, it recognizes a person's words without ever having been trained specifically for that person. The system accepts continuous speech, rather than isolated word. This means that a person can speak more normally, without pausing between each word. Computer output speech can either be sentences and phrases recorded by human speakers, or synthesized text-to-speech output. Text-to-speech output is produced by providing text to a speech synthesizer, which then vocalizes the text. Translation is currently provided between English and Spanish, Mandarin Chinese, Korean, and French. Phrase-based, textual translators are sold commercially. Commercial systems, however, do not accept spoken input, do not generate spoken output, and do not have the customized vocabularies necessary for military operations.

## Background

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Automatic Spoken Language Translation technology was originally developed for the military domain of field interrogation. In situations where there are a large number of non-English-speaking potential informants and a requirement for timely intelligence acquisition, the technology can assist novice interrogators, or interrogators who do not have the appropriate language skills, as a 'screening' aid. Screened detainees determined to have the most useful information could be passed to more experienced interrogators for a more in-depth interrogation. An early version of the translation system accepted English as input and translated it into computer-spoken Spanish, Arabic, or Russian, as selected by the user. Other potential military applications for the technology include its use for monitoring foreign-language radio communications, facilitating communications for multi-national military operations, and cost-effective augmentation and reinforcement of foreign language skills of military linguists and special operations personnel. The technology has applications to any situation in which speakers of different languages need to communicate. Spoken Language Translation technology can be used by law enforcement personnel to acquire real-time statements at crime scenes from non-English-speaking suspects, witnesses, and victims; aid in interrogations at booking stations and during polygraph examinations; and encourage community goodwill by allowing officers on the beat to communicate with community members. The medical community can use the technology to speed initiation of appropriate care in hospital emergency rooms and to assure doctor-patient confidentiality during medical examinations.